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October 27, 2004

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APPLICATION NUMBER: 60/506,470

FILING DATE: *September 25, 2003*

RELATED PCT APPLICATION NUMBER: PCT/US04/31288

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Certified by

Jon W Dudas

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15541 U.S. PTO
09/25/03

PTO/SB/16 (08-03)

Approved for use through 07/31/2006. OMB 0651-0032
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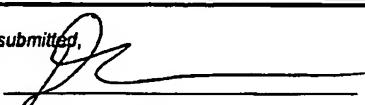
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INVENTOR(S)			
Given Name (first and middle [if any])	Family Name or Surname	Residence (City and either State or Foreign Country)	
John D.	Mize	Spokane Valley, Washington	
Additional inventors are being named on the _____ separately numbered sheets attached hereto			
TITLE OF THE INVENTION (500 characters max)			
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ENCLOSED APPLICATION PARTS (check all that apply)			
<input checked="" type="checkbox"/> Specification Number of Pages 7		<input type="checkbox"/> CD(s), Number _____	
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<input type="checkbox"/> Application Date Sheet. See 37 CFR 1.76			
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<input type="checkbox"/> Applicant claims small entity status. See 37 CFR 1.27.		FILING FEE	
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<input checked="" type="checkbox"/> No.			
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[Page 1 of 2]

Date September 25, 2003

Respectfully submitted,

SIGNATURE 

TYPED or PRINTED NAME David G. Latwesen, Ph.D.

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(if appropriate)

Docket Number: H0006253

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USE ONLY FOR FILING A PROVISIONAL APPLICATION FOR PATENT

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EV318285016

If the treated component has threads, bosses or other parts that are to be protected during the chemical treatment and/or during the bead blasting, one or more appropriate protective coverings can be provided over such parts prior to the chemical treatment and/or prior to the bead blasting.

The invention can be utilized to treat, for example, 200mm and 300mm Ta coils.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PROVISIONAL PATENT APPLICATION

* * * * *

**METHODS OF CLEANING AND REUSING TANTALUM
COMPONENTS**

* * * * *

INVENTOR

John D. Mize

ATTORNEY'S DOCKET NO. H0006253

Removing the TaN from Ta coils (or other components) could allow customers to reuse the coils(or other components) at least once. This is a method to remove the TaN from Ta coils(or other components) used in PVD TaN processes.

The invention includes a process for removing TaN from a Ta surface of a component. Once the TaN is removed the component (such as, for example, a coil) can then be reinstalled and reused in a sputtering chamber.

A spent component (i.e., a Ta component coated with TaN) is received. The component is treated with hydrofluoric acid (HF), subsequently treated with bead blasting, and then again treated with HF. The second HF treatment is conducted until there is little to no detectable bubbling of the acid. It appears that the bubbling is present while the TaN is present, and accordingly that cessation of bubbling indicates removal of TaN. The HF treatment can utilize a solution comprising about 33% HF (by volume) in water. The initial HF treatment can be proceeded by degreasing of the component (utilizing, for example, alkali soap), and rinsing of the degreased component. The initial HF treatment can be followed by a water rinse and subsequent drying (utilizing, for example, dry stream of N₂) prior to the bead blasting. The final HF treatment can be proceeded by an appropriate rinse (such as a water rinse), and can be followed by a water rinse and subsequent drying and, if appropriate, packaging. The bead blasting can utilize 16-24 grit Al₂O₃. The first HF treatment, bead blasting and second HF treatment can be together considered to comprise a three step process for treating a Ta-containing component for removing TaN from a surface of the component.

Ta Coil Refurbishment

TaN Removal

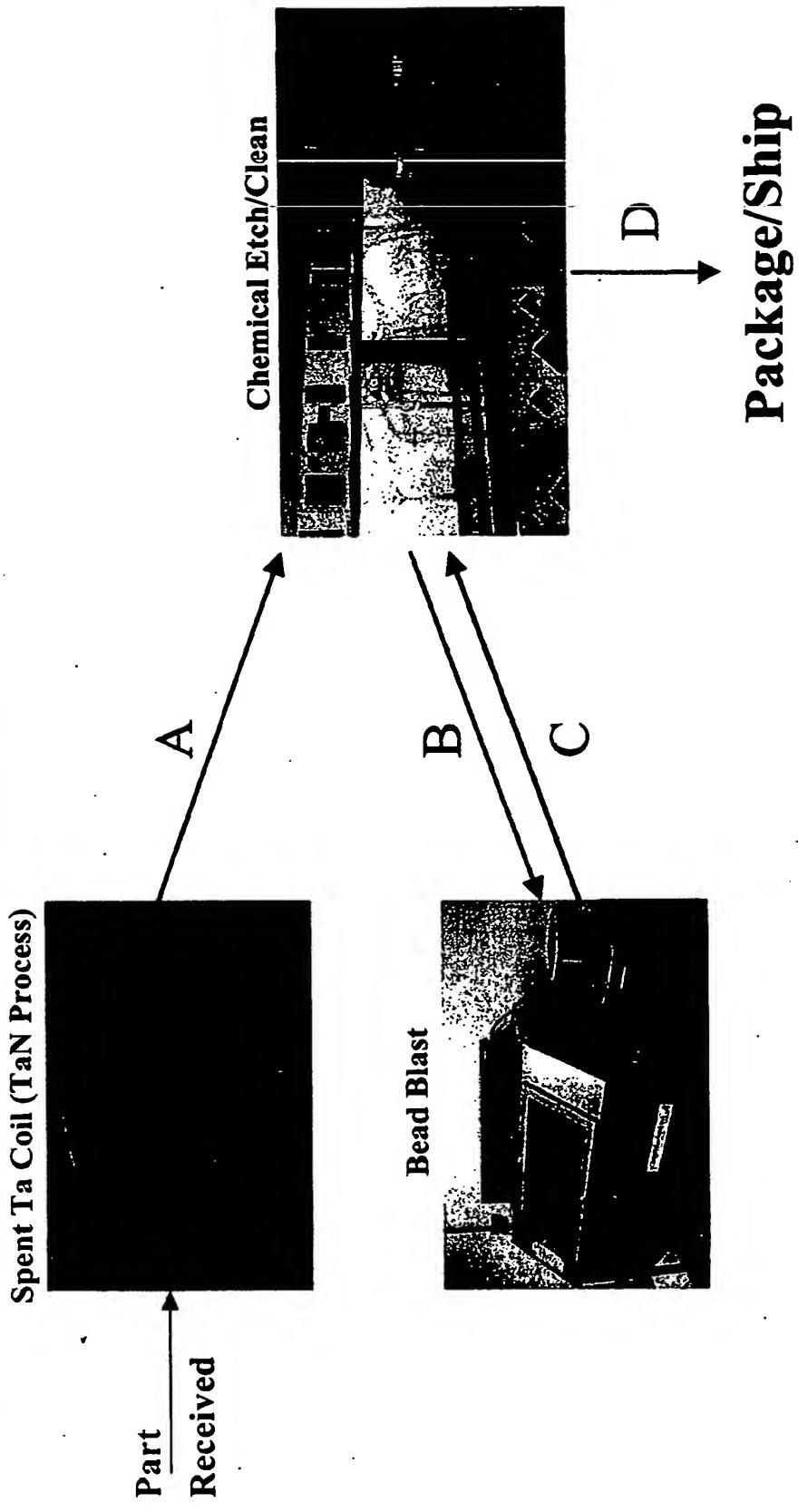
9-3-03

Honeywell

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OEM/Metals Group

Ta Coil Refurbishment Process

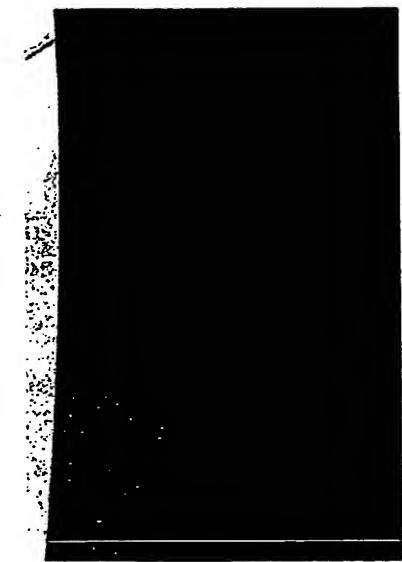


Honeywell

OEM/Metals Group

300mm Ta Coil Images - Ra~380 μ -inches

Coil
ID

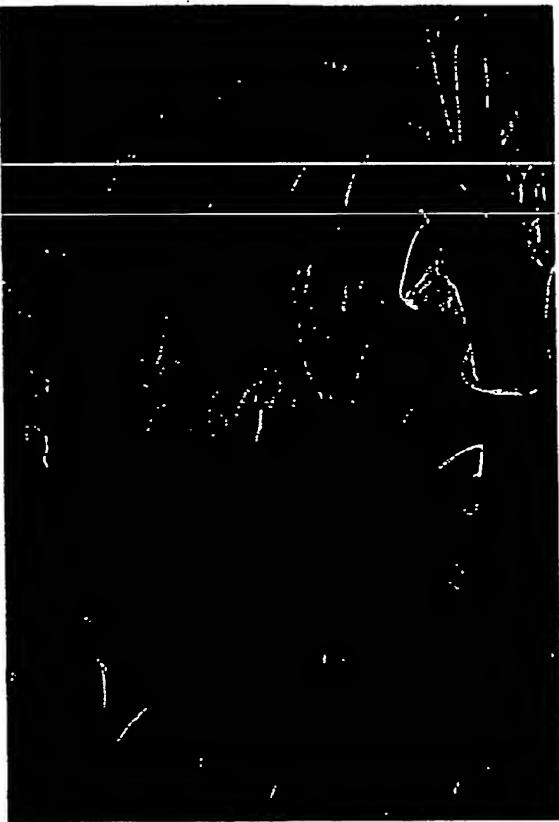


Rough Surface

Coil
OD



Coil
Boss/OD



Honeywell

Ta Surface Cross Sections ~2000kWh

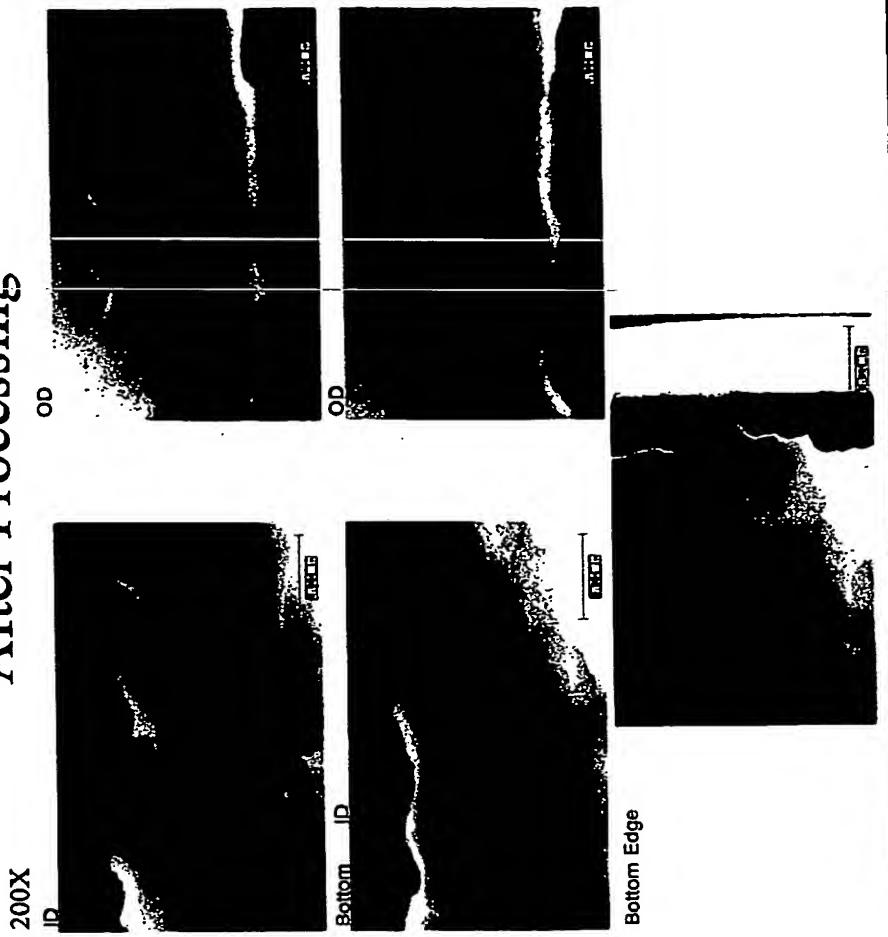
Before



‘As IS’ → TaN Detected



After Processing



Document made available under the Patent Cooperation Treaty (PCT)

International application number: PCT/US04/031288

International filing date: 24 September 2004 (24.09.2004)

Document type: Certified copy of priority document

Document details: Country/Office: US
Number: 60/506,470
Filing date: 25 September 2003 (25.09.2003)

Date of receipt at the International Bureau: 04 November 2004 (04.11.2004)

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b)



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